



PUBLIC NOTICE

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DA 10-923

Released: May 21, 2010

**PUBLIC SAFETY AND HOMELAND SECURITY BUREAU OFFERS FURTHER GUIDANCE
TO CONDITIONAL WAIVER RECIPIENTS ON COMPLETING THE INTEROPERABILITY
SHOWING REQUIRED BY THE 700 MHZ WAIVER ORDER**

PS Docket No. 06-229

On May 12, 2010, the Commission released an order (*Waiver Order*) granting conditional waivers to twenty-one public safety entities (Waiver Recipients) for early deployment of public safety broadband networks in the 700 MHz public safety broadband spectrum (PSBB Block).¹ The *Waiver Order* establishes technical, operational and governance conditions for early deployment and requires each Waiver Recipient to submit to the Public Safety and Homeland Security Bureau (Bureau), within a specified time window, a detailed plan for achieving interoperability with other public safety broadband networks (Interoperability Showing). In this Public Notice, we provide further guidance to the Waiver Recipients on the required contents of the Interoperability Showing. After receiving approval from the Office of Management and Budget (OMB) to perform the information collections contemplated in the *Waiver Order*, the Bureau will release a Public Notice announcing the opening of a thirty-day window during which a Waiver Recipient must submit its Interoperability Showing to the Emergency Response Interoperability Center (ERIC).

I. General

In the Interoperability Showing, Waiver Recipients must demonstrate sufficient technical and operational details on their build-out plans to achieve operability and interoperability. In preparing their Interoperability Showings, Waiver Recipients are expected to employ sound engineering principles and otherwise comply with the requirements of the *Waiver Order*. ERIC will analyze the viability of the Interoperability Showings and ensure they are consistent with the terms of the *Waiver Order* and achieve interoperability.

To facilitate the evaluation process, this Public Notice provides additional guidance to the Waiver Recipients for the purpose of the required Interoperability Showings. Adherence to this guidance is strongly encouraged to ensure uniformity in the filings, and a streamlined process both for the Waiver Recipients in preparing the showings and ERIC's review and analysis.

¹ See Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, PS Docket 06-229, FCC 10-79 (rel. May 12, 2010).

Consequently, we request that the data submissions for the Interoperability Showings follow these guidelines:

- The Interoperability Showing should be prefaced by an executive summary of less than **5 pages**. This summary should provide a high-level explanation of how the Waiver Recipient's network will achieve interoperability.
- The Interoperability Showing should include sections addressing each interoperability component discussed in Section II below. We request that Waiver Recipients use Section II of this Public Notice as a framework for organizing the contents of their showings. Each showing must be less than **30 pages** (not including the executive summary) and in 11-pt. or larger type. Additional information can be submitted in appendices if needed; however, the content of the showing should be provided in the body of the document.
- All submissions should be in PDF format and all text should be searchable.
- Petitioners may be required to file non-standard sized documents in paper format.
- Waiver Recipients may arrange a brief Power Point presentation to ERIC highlighting the key elements of their showings. Presentations can be provided either in person or via teleconference. Contact Jennifer A. Manner at jennifer.manner@fcc.gov or 202-418-3619, Public Safety and Homeland Security Bureau, to schedule a presentation.
- Interoperability Showings may be submitted under a request for confidential treatment pursuant to Section 0.459 of the Commission's rules.

II. Interoperability Components

A. System Architecture

A broadband LTE-based network consists of two parts, the Radio Access Network (RAN) and an Evolved Packet Core (EPC). There may be other core networks connected to the EPC that provide connectivity and packet transport for public safety services.

Radio Access Network (RAN) Architecture. Waiver Recipients should provide an architectural description and drawings of the RAN including functional descriptions and capabilities of each element. The RAN description and drawings should include all connections, clearly labeled, to include the backhaul configurations and connectivity to the core network. The architectural description should support the interoperability showing and reveal any issues that hinder interoperability.

Core Network Architecture. Waiver Recipients should provide an architectural description and drawings of the EPC and other core networks including functional descriptions and capabilities of each element. The Core Network architectural description should include all connections, clearly labeled, to include any interfaces planned for interconnection to non-LTE based or to commercial LTE network systems, if any. The architectural description should support the Interoperability Showing and identify any issues that hinder interoperability.

Interfaces. Waiver Recipients should provide a list of interfaces that are in compliance with 3GPP Release 8 of the LTE standard, including those specified in the *Waiver Order*. They

should also provide the list and description of those interfaces that are not fully compliant with 3GPP Release 8 of the LTE standard, with an analysis on the interoperability impact, if any. *Mobility and Handoff (Handover)*. Waiver Recipients should describe how nomadic, portable and high speed (75 mph) mobility and seamless handoffs are achieved according to 3GPP Release 8 of LTE specifications between base station nodes within the region's broadband network. Further, they should describe how the system provides mobility across base station nodes while maintaining a secure connection (VPN session) and session persistence in a portable environment. They should also describe how the system handles mobility and handoff when entering into adjacent regional public safety LTE networks. Waiver Recipients should also describe if any other handling features are provided, and if there is any interoperability issues.

Roaming. Waiver Recipients should provide a description of their roaming capability to and from other regional public safety broadband networks based on the requirements specified in the *Waiver Order*. Additionally, such description should include roaming to and from commercial networks, if provided. Responders should also provide operational plans concerning roaming, and specify their intent for roaming agreements with other jurisdictions, if any, until the FCC's final rules are in place.

Priority access and QoS. Waiver Recipients should provide a description of priority access schemes and Quality of Service (QoS), if they are implementing and operating these capabilities in their networks. They need to discuss the impact of such implementation on the nationwide interoperability of the public safety network.

Security. Waiver Recipients should provide detailed specification for the security features they intend to employ for their networks. This should include the selection of features from 3GPP Release 8 of LTE security features as specified in the *Waiver Order*. Various security features for Key Management, Encryption, Authentication, Authorization, and Identification should be demonstrated. Waiver Recipients should also demonstrate any interoperability issues that may arise from the selection of these security features.

Devices. Waiver Recipients should provide specifications for their planned devices, including their type (form factor), operational specification, spectrum band coverage, future upgrades, and any additional information, if available. Waiver Recipients should address device interoperability concerns, if any.

B. Applications

Each Waiver Recipient's network will likely support a range of applications, including those required by the *Waiver Order*. The Waiver Recipient should describe in sufficient details how the applications required by the *Waiver Order* will be provided. The Waiver Recipient should also provide specifics on any additional applications to be supported on the network, and provide an assessment as to how such applications impact interoperability.

C. Reliability and Availability

Waiver Recipients should provide their plans for the reliability and availability of their network. For example, Waiver Recipients should discuss how the major elements of the system are highly available and/or redundant. This should include power systems, backhaul, site equipment, core network equipment and network operations centers (NOCs). The availability of radio signal within the service area, and any mechanisms that will provide redundant coverage (i.e., in the case of a base station outage) should also be discussed. Waiver Recipients should discuss the mean time between failures for all system elements, including devices.

D. Radio Frequency (RF) Engineering

1. Radio access network planning

Waiver Recipients should provide their proposed RF design guidelines and demonstrate how these guidelines and RF system implementation would meet their coverage and capacity needs. The showing should include link level analysis for the intended mobility scenarios and relevant applications, the initial planned sites, site configuration, channel bandwidth and reuse factors.

2. Interference Coordination

Waiver Recipients should provide their proposed plan for interference mitigation techniques within the region and with adjacent regions, which will promote interoperability by minimizing radio frequency interference between them. They should describe how these techniques will be implemented within the network infrastructure and/or equipment.

E. Testing

Waiver Recipients should provide their initial and long term plans for testing of their system, including timelines, type of testing, network elements, devices and applications that are subject to testing, and test-bed. This showing should specifically show a plan for meeting the requirement of the *Waiver Order* that Waiver Recipients participate in the PSCR/DC demonstration network. Waiver Recipients should also address Standards Conformance Testing, and Interoperability Testing (IOT). Additionally, they should address issues that they may be facing, and potential problems that may hinder interoperability. All timelines or schedules should be in Gantt chart format.

F. Deployment

Waiver Recipients should provide a deployment plan that is sufficiently detailed, including milestones. This plan should include a timeline presenting phases of deployment as well as various stages of deployment within a phase such as site planning, network design, testing and trials, and operations. This plan should include the geographic coverage, the number of cell sites, and the technical/operational specifics on the potential partnership with other network providers, if any. Critical paths and milestones should be clearly designated. All timelines or schedules should be in Gantt chart format.

G. Operations, Administration and Maintenance (OA&M)

Waiver Recipients should provide a brief description of their planned network operations capabilities, including systems and processes related to network management, special operations and coordination or interoperability with other networks, administration/provisioning, and maintenance. They should demonstrate performance reporting capabilities if planned. They should also address the operational aspects of security. Waiver Recipients should address operational aspects of interoperability and flag any potential issues to arise for future development of nationwide network.

III. Conference Call to Answer Questions

The Bureau will hold a teleconference call on May 28, 2010, at 10 a.m. ET to answer any questions that the public may have about this guidance. The call information is:

Call in number is (800) 516-9896

Participant code is 56406#

IV. Filing Procedures

The Interoperability Showings may be submitted using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies.² Comments can be filed through the Commission's ECFS filing interface located at the following Internet address: <http://www.fcc.gov/cgb/ecfs/>. Comments can also be filed via the Federal eRulemaking Portal: <http://www.regulations.gov>.³ In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- Effective December 28, 2009, all hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. **Please Note:** The Commission's former filing

² See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (1998).

³ Filers should follow the instructions provided on the Federal eRulemaking Portal website for submitting comments.

location at 236 Massachusetts Avenue, NE, Suite 110, Washington, DC 20002 permanently closed on December 24, 2009.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

To the extent that information contained in a filing made pursuant to this Public Notice is confidential or proprietary, such information may be submitted under a request for confidential treatment.⁴

People with Disabilities: To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530, (202) 418-0432 (TTY).

For further information about this Public Notice, please contact Jennifer A. Manner at (202) 418-3619.

⁴ See 47 C.F.R. § 0.459.